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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/622,694

07/21/2003

Ryo Haga

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02/22/2005

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

YOHA, CONNIE C

ART UNIT

PAPER NUMBER

2827

DATE MAILED: 02/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/622,694

Applicant(s)

HAGA ET AL.

Examiner

Connie C. Yoha

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 9-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

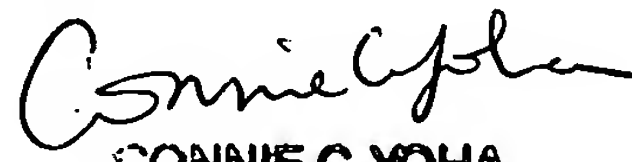
Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.


CONNIE C. YOHA

PRIMARY EXAMINER

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This office acknowledges receipt of the following items from the Applicant:

Papers submitted under 35 U.S.C. 119(a)-(d) have been placed of record in the file.

Information Disclosure Statement (IDS) filed on 7/21/03 was considered.
2. Claims 1-16 are presented for examination.

Specification

Title

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 1-3, and 9-12, are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's cited prior art figures, in view of Oohashi, Pat. No. 6602751.

With regard to claim 1 and 9, the prior art figure 2 of the applicant's disclosure, discloses that a memory comprising a memory cell array (fig. 2, MC); a sense amplifier (fig. 2, S/A) to read/write data from/in the memory cell array; a pair of bit lines (fig. 2, BLt, BLc) to connect the memory cell to the sense amplifier; a bit line equalizer (fig. 2, BLE) to equalize potential of the pair of bit lines; and a sense amplifier equalizer (fig. 2, SAE) to equalize potentials of two power supply nodes (fig. 2, PN2, PN1) of the sense amplifier. The disclosed prior art does not disclose wherein the sense amplifier equalizer comprises MOS transistors whose gate oxide films have different thicknesses. However, Oohashi discloses a memory device, having a logic circuit made up of a combination of MOS transistors having different properties, specifically of a plurality of kinds of MOS transistors having a gate oxide film with different film thicknesses (col. 1, line 45). The thickness of the gate oxide depends on the MOS transistors and its usage, such as, the desire to obtain a device having the characteristic of high operation speed, reliability, power saving and area consumption (col. 1, line 45-63). Therefore, it would have been obvious for one having an ordinary skill in the art at the time the invention was made to recognized that the prior art sense amplifier equalizer's MOS transistors can have different oxide thickness that exhibit the characteristic of high speed and space reduction. For, in connection with performance of an individual MOS transistor, the smaller the size of a circuit element becomes, the higher the performance of the circuit element becomes.

With regard to claim 2 and 11, prior art figure 2 of the applicant's disclosure, discloses wherein the sense amplifier equalizer is controlled by control signals (fig. 2, SAEQL being L or H) having different logic amplitudes in corresponding with the MOS transistors. (also with regard to claim 3 and 12).

With regard to claim 10, prior art figure 2 of the applicant's disclosure, discloses wherein the sense amplifier equalizer is arranged between the sense amplifiers.

Allowable Subject Matter

5. Claim 4-8 and 13-17 are objected as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record does not show the limitation of wherein at least one of the control signals is generated by level shifters. Prior art also does not discloses wherein the MOS transistors comprises a thin film type transistor which short-circuits the two power supply nodes, and a thick film type transistor which has a gate oxide film thicker than that of the thin film type transistor and applies a precharge potential to the two power supply nodes.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. Takeuchi et al (6046940), Umezawa et al (6333662), Toda et al (6556507) and Yoon (6205068) disclose a memory device.

7. When responding to the office action, Applicants= are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

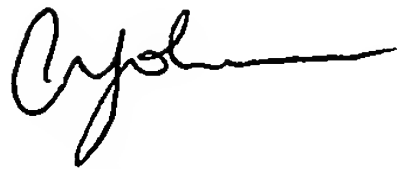
8. Shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned (see MPEP 710.02 (b)).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to whose telephone number is (571) 272-1799. The examiner can normally be reached on Mon. - Fri. from 8:00 A.M. to 5:30 PM. The examiner's supervisor, David Nelms, can be reached at (571) 272-1787. The fax phone number for this Group is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-0956.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov> Should

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you have questions on access to the Private Pair system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



C. Yoha

February 2005



CONNIE C. YOHA
PRIMARY EXAMINER